Amendments to the Specification:

Please replace the paragraph beginning on page 3, line 14 with the following rewritten paragraph:

Referring to **FIG. 1**, the abrasive article **100** comprises abrasive composites **120** separated by a gap or boundary. The abrasive composites are bonded to a surface of a backing **130**. The boundary or boundaries associated with the composite shape result in one abrasive composite being separated to some degree from another adjacent abrasive composite. To form an individual abrasive composite, a portion of the boundaries forming the base shape of the abrasive composite must be separated from one another. In some embodiments, the base or a portion of the abrasive composite closest to the backing can abut with its neighboring abrasive composite. Abrasive composites **120** comprise a plurality of abrasive particles that are dispersed in a binder, and, a grinding aid. It is also within the scope of this invention to have a combination of abrasive composites bonded to a backing in which some of the abrasive composites abut, while other abrasive composites have open spaces between them.

Please replace the paragraph beginning on page 3, line 28 and continuing to page 4 with the following rewritten paragraph:

The backing of this invention has a front and back surface and can be any conventional abrasive backing. Examples of useful backings include polymeric film, primed polymeric film, cloth, paper, vulcanized fiber, nonwovens, and combinations thereof. Other useful backings include a fibrous reinforced thermoplastic backing as disclosed in U.S. Pat. No. 5,316,812 and an endless seamless backing as disclosed in published ~~World~~ <u>PCT</u> Patent Application No. WO 93/12911. The backing may also contain a treatment or treatments to seal the backing and/or modify some physical properties of the backing. These treatments are well known in the art.

Please replace the paragraph beginning on page 7, line 3 with the following rewritten paragraph:

Ethylenically unsaturated compounds preferably have a molecular weight of less than about 4,000 and are preferably esters made from the reaction of compounds containing aliphatic monohydroxy groups or aliphatic polyhydroxy groups and unsaturated carboxylic acids, such as acrylic acid, methacrylic acid, itaconic acid, crotonic acid, isocrotonic acid, maleic acid, and the like. Representative examples of acrylate resins include methyl methacrylate, ethyl methacrylate styrene, divinylbenzene, vinyl toluene, ethylene glycol diacrylate, ethylene glycol methacrylate, hexanediol diacrylate, triethylene glycol diacrylate, trimethylolpropane triacrylate, glycerol triacrylate, pentaerythritol triacrylate, pentaerythritol methacrylate, pentaerythritol tetraacrylate and pentaerythritol tetraacrylate. Other ethylenically unsaturated resins include monoallyl, polyallyl, and polymethallyl esters and amides of carboxylic acids, such as diallyl phthalate, diallyl adipate, and ~~N,N-diallyladkipamide~~ N,N-diallyladipamide. Still other nitrogen containing compounds include tris(2-acryloyloxyethyl)isocyanurate, 1,3,5-tri(2-methyacryloxyethyl)-triazine, acrylamide, methylacrylamide, N-methylacrylamide, N,N-dimethylacrylamide, N-vinylpyrrolidone, and N-vinylpiperidone.

Please replace the two paragraphs beginning on page 12, line 1 with the following two rewritten paragraphs:

In one preferred aspect of the invention, the abrasive coating is in the form of a plurality of abrasive composites bonded to the backing. It is generally preferred that each of the abrasive composites ~~have~~ has a precise shape. The precise shape of each composite is determined by distinct and discernible boundaries. These distinct and discernible boundaries are readily visible and clear when a cross section of the abrasive article is examined under a microscope such as a scanning electron microscope. In comparison, in an abrasive coating comprising composites that do not have precise shapes, the boundaries are not definitive and may be illegible. These distinct and discernible boundaries form the outline or contour of the precise shape. These boundaries separate to some degree one abrasive composite from another and also distinguish one abrasive composite from another.

Referring to **FIGS. 1-1B**, an example embodiment of an abrasive article **100** according to the present disclosure is illustrated. The abrasive article **100** comprises abrasive composites [[**122**]] <u>**120**</u>. In some embodiments, the boundary or boundaries associated with the composite shape result in one abrasive composite being separated to some degree from another adjacent abrasive composite. To form an individual abrasive composite, a portion of the boundaries forming the shape of the abrasive composite must be separated from one another. Note that in **FIG. 1A**, the base or a portion of the abrasive composite closest to the backing can abut with its neighboring abrasive composite. Abrasive composites **120** comprise a plurality of abrasive particles that are dispersed in a binder, and, a grinding aid. It is also within the scope of this invention to have a combination of abrasive composites bonded to a backing in which some of the abrasive composites abut, while other abrasive composites have open spaces between them.

Please replace the paragraph beginning on page 16, line 9 and continuing to page 17 with the following rewritten paragraph:

One method to make the abrasive article of the invention ~~illustrated in FIG. 2~~ is illustrated in **FIG. 2**. Backing **41** leaves an unwind station **42** and at the same time the production tool **46** leaves an unwind station **45**. Production tool **46** is coated with slurry by means of coating station **44**. It is possible to heat the slurry and/or subject the slurry to ultrasonics prior to coating to lower the viscosity. The coating station can be any conventional coating means such as drop die coater, knife coater, curtain coater, vacuum die coater or a die coater. During coating the formation of air bubbles should be minimized. The preferred coating technique is a vacuum fluid bearing die, such as disclosed in U.S. Pat. Nos. 3,594,865, 4,959,265, and 5,077,870, all incorporated herein by reference. After the production tool is coated, the backing and the slurry are brought into contact by any means such that the slurry wets the front surface of the backing. In **FIG. 2**, the slurry is brought into contact with the backing <u>**41**</u> by means of contact nip roll **47**. Next, contact nip roll **47** also forces the resulting construction against support drum **43**. A source of energy **48** (preferably a source of visible light) transmits a sufficient amount of energy into the slurry to at least partially cure the binder precursor. The

term partial cure is meant that the binder precursor is polymerized to such a state that the slurry does not flow from an inverted test tube. The binder precursor can be fully cured once it is removed from the production tool by any energy source. Following this, the production tool is rewound on mandrel 49 so that the production tool can be reused again. Optionally, the production tool may be removed from the binder precursor prior to any curing of the precursor at all. After removal, the precursor may be cured, and the production tool may be rewound on mandrel 49 for reuse. Additionally, abrasive article [[100]] 101 is wound on mandrel [[121]] 102. If the binder precursor is not fully cured, the binder precursor can then be fully cured by either time and/or exposure to an energy source. Additional steps to make abrasive articles according to this first method are further described in U.S. Pat. Nos. 5,152,917 (Pieper et al.) and 6,129,540 (Hoopman et al.), both incorporated herein by reference. Randomly shaped abrasives composites may be made by the tooling and procedures described in U.S. Patent No. 6,129,540, to Hoopman et al.

Please replace the nine paragraphs beginning on page 19, line 27 and extending to page 21, line 19 with the following rewritten nine paragraphs:

Referring to **FIGS. 1-1B**, a portion of an example embodiment of an abrasive article **100** is illustrated. The abrasive article **100** includes a backing **130**. The backing **130** is typically a belt, though other shapes and forms are possible. When the backing **130** is a belt, it typically includes a machine direction and a cross direction, which are arranged ~~orthogonally~~ orthogonal to one another.

The backing **130** is adjacent to and connected to an array **110** of microreplicated features, such as abrasive composites **120**. Typically, ~~the features~~ a plurality of composites **120** are arranged on the backing **130** in an array **110** including an offset. The array **110** is typically oriented on an angle or bias with respect to the machine direction of the article **100**.

~~The array 110 includes a plurality of features 120.~~ In the example embodiment shown, each feature includes a base **122** and a body **123**. In one embodiment, the base **122** is a parallelogram, but can be in other shapes, as the particular applications requires. Base **122** is

adjacent or near the backing **130**, and is connected or coupled to the same. In the example embodiment shown, each feature includes four sidewalls [[127]] 121 or surfaces projecting from the base forming a polyhedron. While the example features shown include four sidewalls **121**, there can be more or less, depending on the particular application. The polyhedron can be of any shape, but is typically pyramidal or prismatic in shape.

Each feature or composite **120** includes at least one sidewall **121**, specifically sidewall **124** that forms positive rake angle γ (see FIG. 1A) with respect to the base **122**. The rake angle γ on the sidewall **124** forms an undercut ~~section~~ **125** on the sidewall **124**. The undercut **125** functions particularly well in applications where wood is the material to be abraded with the abrasive article **100**.

In woodworking applications, swarf or other debris tends to build up on and clog the abrasive article **100**. Removal of swarf or other debris is facilitated by including a radiused portion **R** on the sidewall **124** ~~have~~ having the undercut **125**. The radiused portion **R** is located adjacent to the backing **130**. Including a gap or land region between adjacent features also facilitates removal of built up material.

Typically, the undercut ~~face~~ **125** is the leading edge [[124]] of the ~~abrasive article~~ composite **120** as the abrasive article **100** engages a workpiece to remove material. As previously discussed, the leading edge [[124]] can engage the workpiece with the leading edge oriented to either directly engage or engage at a bias. Including a slight bias angle allows swarf or other debris to be pushed preferentially to one edge of the abrasive article **100** for removal. Also, in one embodiment, the point of the body **123** located most distally from the base **122** does not project into the area defined by the perimeter of the base **122**. This is illustrated in **FIG. 1A**, wherein the perpendicular line extending from the backing **130** shows the most distal point on the body **123** of the left-most feature or composite **120** projects outside of the area defined by the perimeter of the base **122**.

Each feature or composite **120** can also include a top planar portion **128** that is angled at an angle θ with respect to the base **122** of the feature or composite **120**. In one embodiment, the top section **128** is coated with abrasive particles **140**. The abrasive particles **140** assist in removing material from and further conditioning the workpiece.

The feature <u>or composite</u> **120** of the array **110** are typically arranged having a pitch **P** in the machine direction (the direction that the undercut surface engages a workpiece) and a gap **M** between adjacent feature <u>or composite</u> **120** in a direction perpendicular (cross-direction) to the machine direction. The pitch **P** between features <u>or composites</u> **120** in the engagement (or machine) direction can be varied so that the leading edge of the undercut **125** sidewall overlaps the base **122** of the feature directly adjacent or neighboring. The pitch **P** can be constant or varied.

Also, in one embodiment, the trailing sidewall <u>**121**, specifically sidewall</u> **127** (opposite the undercut sidewall <u>**124**</u>) is slanted at angle **α** less than 90 degrees from the base **122**. Also, adding a radiused section **R2** at the base of each sidewall <u>**121**</u> in the cross-direction will also aid in material removal. Also, the opposed sidewalls <u>**121**</u> in the cross-direction can be angled out from being perpendicular at an angle **β**<u>, as illustrated in **FIG. 1B**</u>.

Please replace the two paragraphs beginning on page 21, line 21 and continuing to page 22 with the following rewritten two paragraphs:

An abrasive article according to the present disclosure was made and tested. The article included an array of features arranged on a backing material. The features were arranged so that the features were offset in the cross-direction. Each feature had a height at its point most distally from the backing of about 20 mils (1 mil equals 0.001 inch), a machine direction pitch P of about 32 mils and a cross direction gap of about 2 mils. The radius in the sidewall on the undercut sidewall was about 4 ~~miles~~ <u>mils</u> and the radius of each sidewall in the cross-direction was about 1.3 mils. The undercut sidewall had a positive rake angle of about 5 degrees. The sidewall opposite the undercut sidewall was angled at about 45 degrees from the base and the planar top portion was angled at about 10 degrees from parallel with respect to the base.

The abrasive article described-above has been found by the inventors to be particularly well-suited [[to]] <u>for</u> removing material from <u>a</u> wooden workpiece. The undercut sidewall performs the majority of material removal. The abrasive particles on the planar top section then

lightly scratch the surface of the workpiece, allowing the workpiece to be ready to take a stain without further preparation.